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EXPENSES AND PROFITS

OF

CULTIVATORS IN THE PUNJAB

(ESTIMATES FRAMED BY ENQUIRIES INTO ACTUAL PRACTICE),

BY

W. S. HAMILTON, I.C.S.

LATE DIRECTOR OF AGRICULTURE AND INDUSTRIES, PUNJAB.

1916.

Lahore:
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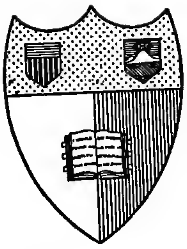

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Expenses and Profits of Cultivators in the Punjab.

WHETHER we enquire from the cultivator himself or from a revenue official it is difficult to extract any answer to the question "How much does it cost to grow an acre of wheat or cotton or sugarcane and what is the profit left over?" I do not think the question is really such a difficult one, and in the annexed tables I have attempted to answer it for a few crops in a few localities. It would be no great matter to prepare similar tables for each important crop in each tract of the province. My tables have been drawn up as opportunity offered on tour, and the answers of the villagers have been noted down, as we sat and talked beside the village well. The entries follow almost exactly the answer given: they are not my own ideas.

The profits on an acre work out in the different cases to Rs. 37-13-6, Rs. 50-6-0, Rs. 37-3-0 and Rs. 29-8-0 for wheat, to Rs. 42-9-6 and Rs. 58 for cotton, to Rs. 50 and Rs. 39-4-0 for sugarcane and to Rs. 69 for thick cane. It will be noticed that these figures are much higher than Settlement Officers usually admit. One reason of this is that I deal with a normal crop—the crop a cultivator expects to gather in an ordinary year—while Settlement Officers must, in order to guard against crop failures, take as their standard that very visionary phenomenon, the average crop. The normal crop is frequently garnered; the average crop never except in a bad year.

If cultivators' profits from their lands were no larger than Settlement Officers report, such high rents as are actually paid—*e.g.*, Rs. 18 to Rs 21 the acre in the Chenab Colony—could not be paid; the peasantry would not be so prosperous as they are, and the standard of living would not be rising so rapidly as is undoubtedly the case. The cautious estimates made at settlement should not be used for other purposes than those for which they are framed. To use them on other occasions is unfair sometimes to the Government and nearly always to the cultivator. It is unfair to Government when the severity of the land revenue is alleged or the prosperity of the rural population is called in question, for the fact is that the good husbandman can make a much better living than official reports show: it is unfair to the cultivator when there is a question of compensating him for a lost crop, for what he has really lost much exceeds the meagre profits on which the land revenue assessment is calculated. For rural administration it would be better to use as our guides such standards of expenditure and profit as appear in the annexed tables.

It is at once evident that the cost and maintenance of his plough cattle is the heaviest burden which the cultivator has to bear. The price of bullocks is rapidly rising, and moreover better tillage depends upon the use of even stronger bullocks than at present; so the cost of bullocks is likely to eat up more and more of the profits of agriculture. The cost of feeding a pair of bullocks varies considerably in the different villages—

		Rs.	A.	P.	
Lyallpur district		107	8	0	a year.
Amritsar ,,		145	2	0	,,
Gujranwala district	(1)	61	8	0	,,
Ditto	(2)	81	8	0	,,
Gurdaspur district	(1)	89	0	0	,,
Ditto	(2)	161	14	0	,,
Hissar district		104	0	0	,,

I cannot completely reconcile these figures. In Amritsar the figure is high as the zemindars from whom enquiry was made were well-to-do and fed a good deal of gram. The reason for the high cost in the second Gurdaspur statement is probably that in that district grazing is very scanty. It is always difficult to put into figures the cost of keeping bullocks, as the ordinary cultivator has no account of the home-grown stuff fed to his animals and at the best can only tell what his whole herd, which includes a cow, young stock and perhaps a buffalo as well as plough bullocks, consumes.

If he has a good crop he throws down food lavishly and does not take the trouble to cut up his chari or senji and wastes his maize stalks altogether. But so much fodder would not be required with economical feeding.

There are three ways in which the cost of the bullocks' food can be calculated. We may take the cost of producing the fodder. But that is less than the real cost, since, if it had not been necessary to grow fodder, the land could have been put under valuable crops. Or we may work out the market value of the home-grown fodder consumed, as I have done. This gives a true result; but we have to use some rather hypothetical factors. It would probably be best to ascertain from our crop records for each village what area of fodder crops is grown for each pair of bullocks, leave that area out of the profit yielding area of each holding and make no deductions on account of the bullocks' feed from crops which do not provide fodder. I have left out of account the manurial value of fodder crops which should be deducted from the cost of the fodder, as so little of the cattle food is in the Punjab returned to the soil as manure. I have divided the cost of the plough cattle equally over the whole cropped area. Absolute accuracy would require that a greater proportion should be borne by those crops such as sugarcane and wheat which are given most cultivation; but the calculation is intricate and the results would not be very valuable.

The yields are what the cultivators say they expect to get in a season in which there are no special calamities such as drought or floods or hail or cotton boll-worm. They are such crops as can be harvested only from land which has been properly ploughed and has not been spoiled by exhausting rotations or over-cropping; but on the other hand they are not, with the possible exception of the wheat yield in Amritsar, bumper crops such as are the hope but not the expectation of every farmer and can be won only by specially good tillage or from specially good land. The outturns may be criticized as high by those who are accustomed to look to averages; but I am convinced that in most years in the great majority of fields the actual yields are not less than these. I am referring to irrigated crops: in unirrigated crops the fluctuations between abundance and nothing are much more violent and frequent, and there is perhaps nothing which can be regarded as a normal yield.

The prices I have used are such as the cultivator could have obtained in most months during the three years before the war broke out.

W. S. HAMILTON.

12*th May* 1915.

GLOSSARY.

Kila	A square or rectangular field of different areas in different localities.
Pakka maund	82 lbs. = 40 sers.
Pakka ser	2 lbs.
Kacha maund	⅖ of a pakka maund.
Kacha ser	⅖ of a pakka ser.
Kharif	Harvest sown in April to July and reaped in October and November.
Rabi	Harvest sown in October and November and reaped in March and April.
Lohar	Smith.
Tarkhan	Carpenter.
Kumhar	Potter.
Mochi	Tanner.
Sepi	Menial employed on cultivation.
Chari	Sorghum vulgare sown thick for fodder.
Toria Sarson	Two varieties of rape.
Senji	Melilotus parviflora.
Moth	A pulse. Phaseolus aconitifolius.
Másh	A pulse. Phaseolus mungo.
Gwar	A pulse.
Paunda	A thick variety of sugarcane, chewed raw.
Bhusa Turi	Chopped wheat straw.
Munj	The fibre of saccharum grass.
Piazi	Asphodel, a common cold weather weed.
Atá	Coarse wheat flour.
Bharí	A load as heavy as a man can carry.
Wadh	Stubble.
Mahl	Circular well rope on which the buckets are fixed.

I.—Expenses of cultivation in a village of Jats near Buchian

I.—General cultivation expenses.

		Rs.	A.	P.
1.	Cost of a pair of bullocks Rs. 150: interest at $6\frac{1}{4}$ per cent.	9	6	0
2.	Bullocks will work 10 years. Depreciation ...	15	0	0
3.	Feeding of a pair of bullocks for one year (3) ...	107	8	0
4.	Annual cost of implements	1	8	0
	Total ...	133	6	0

Cropped area under one plough is 10 kilas ∴ cost of cultivation per kila is Rs. 10-4-0.

II.—Wheat.

		Rs.	A.	P.
1.	Cost of cultivation as above	10	4	0
2	Cost of seed 26 sers at Rs. 3 the maund (4) ...	2	0	0
3.	Manuring costs nothing.			
4.	Weeding (if there is much *piazi*) 6 men for one day at 6 annas	2	4	0
5.	Reaping (5)	6	2	0
6.	Winnowing wheat and stacking straw at 2 sers per maund (6) which on 20 maunds 16 sers (8) of grain = 41 sers worth	3	1	0
7.	Lohar and tarkhan—village menials (7)	1	6	0
8.	Land revenue (Rs 6), cesses ($11\frac{1}{2}$ annas) and water rate (Rs. 3-12-0)	10	7	6
	Total ...	35	8	6

	Rs.	A.	P.		Rs.	A.	P.
Total produce 20 maunds (8) of grain at Rs. 3 = ...	60	0	0				
40 maunds of straw at 3 maunds to Re. 1 = ...	13	5	0				
Total ...	73	5	0	Net profit ...	37	13	6

III.—Cotton.

		Rs.	A.	P.
1.	Cost of cultivation as above	10	4	0
2.	Seed at 4 sers the kila	0	5	0
3.	Weeding is done by the cultivator with his plough and costs nothing.			
4.	Picking—each picker gets $\frac{1}{10}$th = one maund at Rs. 8 the maund	8	0	0
5.	Tarkhan and Lohar (9)	0	6	0
6.	Land revenue (Rs. 6), cesses ($11\frac{1}{2}$ annas) and water rate (Rs. 3-12-0)	10	7	6
	Total ...	29	6	6

Production of cotton—9 maunds (10) at Rs. 8 = Rs. 72.

Net profit ... 42 9 6

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(3) The fo
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(6) If the
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(7) Blacks
per plough; *plus* (3)

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(8) The cu
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(9) Carpen
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(10) The c
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f cultivation in a village of Jats near Buchiana in the Lyallpur District.

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	Rs.	A.	P.
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… …	9	6	0
ion …	15	0	0
ear (3) …	107	8	0
… …	1	8	0
otal …	133	6	0

las ∴ cost of cultivation per kila is

	Rs.	A.	P.
… …	10	4	0
l (4) …	2	0	0
nen for one day			
… …	2	4	0
… …	6	2	0
w at 2 sers per			
16 sers (8) of			
… …	3	1	0
… …	1	6	0
s) and water rate			
… …	10	7	6
Total …	35	8	6

A. P.

0 0

5 0

5 0 Net profit … 37 13 6

	Rs.	A.	P.
… …	10	4	0
… …	0	5	0
th his plough and			
e maund at Rs. 8			
… …	8	0	0
… …	0	6	0
as) and water rate			
… …	10	7	6
Total …	29	6	6

8 = Rs. 72.

profit … 42 9 6

1 kila = $\frac{1}{25}$ of a square = $1\frac{1}{8}$ acre.
1 kanal = $\frac{1}{8}$ acre.

(1) Cropping of one square = 27·7 acres = 2 ploughs.

Kharif.		*Rabi.*	
Cotton … …	5 kilas.	Wheat … …	10 kilas.
Cane … …	$1\frac{1}{2}$ „	Gram (not in the stubble of a kharif crop) …	2 „
Maize … …	2 „	Toria … …	2 „
Chari … …	2 „	Senji (in maize stubble) …	1 kila.
	$10\frac{1}{2}$ kilas	Lucerne … …	$\frac{1}{2}$ „
			$15\frac{1}{2}$ kilas.

(Such a large area of crop especially of cotton is rare, and shows that the water-supply is very good.)

(2) Cattle kept on half a square.

On one plough.	*On one square.*
2 bullocks.	4 bullocks.
1 buffalo or cow.	2 buffalos.
2 young stock.	1 cow.
	3 young stock.

(3) The fodder included in the cropping above will feed all the cattle: nothing will be bought. The gram will be fed not sold. No estimate is given by the people of the cash value of the chari, etc. The chari is all used green and lasts for 3 months up to the wheat sowings: then lucerne and wheat straw is used. Say—

		Rs.	A.	P.	
2 kilas of chari at Rs. 4 a kanal	=	72	0	0	
1 kila of senji $\frac{1}{2}$ „ „ lucerne } at Rs. 5 a kanal	=	67	8	0	
2 kilas of gram at 10 maunds at Rs. 2-8-0	=	50	0	0	
10 „ bhusa = 400 maunds at 3 maunds to rupee	=	133	0	0	—Probably all this bhusa which is a heavy crop would not be required. Some would be sold.
		322	8	0	

The cost of feeding the 4 bullocks will be two-thirds of the whole—Rs. 215: and of a pair of bullocks Rs. 107-8-0.

(4) Seed rate said to be 20 sers at first; but as land grows older it "keeps" some of the seed and 26 sers is now sown.

(5) 5 men can cut one kila in a day and each gets one *bhari* (bundle) containing 13 sers of grain.

The man or woman who brings out the reapers' food also gets one *bhari* for the whole harvest.

		Rs.	A.	P.
∴ Cost is { 1 maund 27 sers of wheat at Rs. 3	=	5	0	0
3 maunds 11 „ straw at 3 maunds to Re. 1	=	1	2	0
		6	2	0

(6) If the stack is of the form called *dhar* (*i.e.*, a long low stack plastered with mud) the rate is $1\frac{3}{4}$ sers per maund. If the stack is a high one (*musal* or *kup*) in a frame of straw the rate is 2 or $2\frac{1}{4}$ sers the maund.

(7) Blacksmith and carpenter each gets (1) one *bhari* (bundle) containing 16 sers of grain; *plus* (2) 20 sers of grain per plough; *plus* (3) half a *bhari* extra for making the handles of the sickles (dantri).

	Rs.	A.	P.
= 32 + 40 + 16 sers of grain = 88 sers worth at Rs. 3 the maund …	6	3	0
plus 64 + 32 sers of straw = 96 sers at 3 maunds to the rupee … …	0	13	0
	7	0	0

There are 5 kilas of wheat per plough ∴ menials' dues fall at —

$\frac{1}{5}$ of Rs. 7 = Re. 1-6-0 per kila

(8) The cultivators give 18 maunds as the outturn of wheat to be expected from an ordinary good crop. They mean the amount which comes to the threshing floor ∴ total outturn including reaper's share is 20 maunds 16 sers.

(9) Carpenter and blacksmith each gets $2\frac{1}{2}$ sers of seed cotton (kapas) per plough, that is, 5 sers altogether worth Re. 1. There are $2\frac{1}{2}$ kilas of cotton under each plough so the menial's share is about 6 annas.

(10) The outturn with which the zemindar is content is 8 to 10 maunds excluding what the pickers take. Anything under 8 maunds is regarded as unsatisfactory: anything under 10 maunds as hardly good. We are safe taking 9 maunds gross.

II.—Profit from one acre of canal-irrigated wheat in the Tarn Taran T

I.—*General cultivation expenses.*

		Rs.	A.	P.
1.	Price of pair of bullocks Rs. 300 : interest at 6¼ per cent.	18	12	0
2.	Bullocks will work 8 years ∴ depreciation at 12½ per cent.	37	8	0
3.	Feed and keep of a pair of bullocks for a year (3) ...	145	2	0
4.	Annual cost of implements (2)	3	4	0
	Total ...	204	10	0

II.—*Wheat cultivation.*

		Rs.	A.	P.
1.	Average area per plough 20 ghumaos ∴ cost of cultivation per ghumao (1)	10	2	0
2.	Cost of seed at 26 sers per ghumao at Rs. 3 the maund	1	15	0
3.	Manuring costs nothing. There is no weeding.			
4.	Reaping—5 men for one day at the rate of— 5 *bharis* (12 sers of grain) + 5 *makra* ($\frac{1}{6}$th *bhari*) = 70 sers of grain at Rs. 3 the maund = Rs. 5-4-0. + 140 sers straw at 3 maunds to rupee = Rs. 3-2-0.	8	6	0
5.	Threshing is done by the owner and costs nothing			
6.	Winnowing is done by the chuhra who gets 5 per cent. of grain if he is employed for this only. If he is the cultivator's own chuhra he gets 10 per cent. instead of 7 per cent. see next entry.			
7.	Share of chuhra at 10 per cent. as he does the winnowing (4) = 2 maunds worth Rs. 6	6	0	0
8.	Lohar, Tarkhan and Kumhar (5)	0	8	0
9.	Canal water rate Rs. 3-2-0 and revenue and cesses, Rs. 1-10-0	4	12	0
	Total ...	31	11	0
	Yield of grain is given at 8 or 10 maunds the bigha (after deduction of reaper's share), *i.e.*, including reaper's share 9¾ to 11¾ maunds. Say 10 maunds the bigha or 20 maunds the ghumao at Rs 3 =	60	0	0
	Straw 40 maunds at 3 maunds the rupee =	13	5	0
	Total ...	73	5	0
	Net profit per ghumao ...	41	10	0
	Net profit per acre ...	50	6	0

(1) One plough can n

Kh

Cane
Cotton
Maize
Chari, etc.

(1) Plough lasts
(2) 2 shares at R
(3) Sohaga (wooc
(4) Khurpa (trow
(5) Sickle
(6) Gadala or chu
(7) Toka (choppe

Calculations for a

(1) 4 sers of grar
and 2

In the e
in

(2) Senji for 3 m
(3) Wheat straw
mixed with
— that is i
(4) Chari for 5 m
(5) At threshing
Rs. 2 a ma

(6) At Rabi sowin

In the case of small ov
per cent.

In the case of larger o
year, which the zemindar lends
wheat for him. The chuhra get
recovered out of the produce.

(5) Lohar and Tarkhan
many the ploughs.

The Kumhar gets one

∴ 5 × 12 sers grain } have to
+ 5 × 24 sers straw }

Canal irrigated cotton in the Tarn Taran Tahsil

		Rs.	A.	P.
1.	Cost of cultivation of one ghumao as in wheat statement	10	2	0
2.	Seed at 8 sers the ghumao	0	9	0
3.	Weeding is done by the plough and costs nothing.			
4.	Picking—$\frac{1}{9}$th of crop, *i.e.*, 1 maund at Rs. 8 (1) ...	8	0	0
5.	Menials (2)	0	10	0
6.	Canal water (Rs 3-2-0) and revenue and cesses (Rs. 1-10-0)	4	12	0
	Total ...	24	1	0
	Yield is stated at 8 maunds a ghumao, but this means after deduction of the picker's share ∴ total yield 9 maunds a ghumao worth	72	0	0
	Net profit ...	47	15	0
	Net profit per acre ...	58	0	0

(1) **Picking.**—The ca

(2) Lohar ...
Tarkhan ...
Kumhar ...

the Tarn Taran Tahsil of the Amritsar District.

1 ghumao = 2 bighas = ·826 acre.

(¹) One plough can manage 20 ghumaos or 40 bighas as under—

Kharif.		*Rabi.*	
Cane	1 bigha	Wheat	20 bighas at the most.
Cotton	4 bihgas	Gram	4 „ follows chari.
Maize	2 „	Toria	3 „
Chari, etc.	4 „	Senji (in stubble of cotton or maize).	2 „
	11 bighas		29 bighas.

Total 40 bighas.

(²) Annual cost of implements

	Annual cost. Rs.	A.	P.
(1) Plough lasts two years and costs Rs. 2	1	0	0
(2) 2 shares at Re. 0-3-0 each	0	6	0
(3) Sohaga (wooden beam for clod crushing) Rs. 2-8-0 for 5 years	0	8	0
(4) Khurpa (trowel)	0	2	0
(5) Sickle	0	2	0
(6) Gadala or chuha ramba (small pick), Re. 0-4-0 for 4 years	0	1	0
(7) Toka (chopper)	0	8	0
To this may be added another Re. 0-9-0 cost of ropes, etc. ...	0	9	0
Total ...	3	4	0

(³) Feed of bullocks.

Calculations for a *pair*—

(1) 4 sers of gram a day for 5 months. In Maghar and Poh (15th November to 15th January) there is little work and 2 sers a day are enough.

In the end of Poh, in Magh, Phagan and Chet (February to April) when they get green gram or senji and in July and August when they get green grass no gram is given—

	Rs.	A.	P.
4 sers of gram for 5 months ... } at Rs. 2 the maund = 18 maunds 2 sers of gram for 2 months ... } costing Rs. 36	36	0	0
(2) Senji for 3 months (February to April) one ghumao worth	25	0	0
(3) Wheat straw for 3 months (May to July) at 24 sers a day = 54 maunds and also mixed with green fodder in other 8 months at 4 sers a day = 32 maunds — that is in all = 86 maunds worth	28	10	0
(4) Chari for 5 months (August to December) two ghumaos worth	48	0	0
(5) At threshing time during 2 months 2 sers of sarson cake a day = 3 maunds at Rs. 2 a maund	6	0	0
(6) At Rabi sowings either 16 sers of gur worth Rs. 1-8-0 or 32 sers wheat flour worth Rs 2-8-0 } as long as it lasts...	1	8	0
Total ...	145	2	0

(⁴) Chuhra or hali.

In the case of small owners the chuhra helps every 4th day or so in cultivation, winnowing, etc., and gets 7 or 8 maunds per cent.

In the case of larger owners the chuhra is permanently employed. He either gets an advance of Rs. 50 or Rs. 60 for the year, which the zemindar lends him or borrows for him paying the interest or the zemindar cultivates and sows one bigha of wheat for him. The chuhra gets $\frac{1}{10}$th share of the grain produce and 2 meals a day throughout the year. The advance of cash is recovered out of the produce.

(⁵) Lohar and Tarkhan each gets 2 *bharis* (12 sers each of grain) per plough + one *bhari* extra in all cases however many the ploughs.

The Kumbhar gets one *bhari* per plough. We may take 10 ghumaos out of 20 under wheat—

∴ 5 × 12 sers grain } have to be spread over. { 10 ghumaos = 60 sers grain worth Rs. 4-8-0 } = Rs. 5 on 10 ghumao or 8 annas a ghumao.
+ 5 × 24 sers straw } { 120 sers straw worth Rs. 1-0-0 }

arn Taran Tahsil of Amritsar.

(¹) **Picking.**—The calculation is that a picker gets one ser a day and picks in all 9 sers in the day.

(²) Lohar ... }
Tarkhan ... } Each gets 2 sers pakka of *kapas* (seed cotton) per yoke. Out of 20 ghumaos not more than 2 ghumaos would be under cotton ∴ 6 sers of *kapas* out of 2 ghumaos go to these menials or 3 sers from 1 ghumao worth Re 0-10-0.
Kumbar ... }

III.—Expenses of wheat cultivation on a well in the Sharakp

I.—General cultivation expenses.

		Rs.	A.	P.
1.	Price of 2 bullocks at Rs. 100 each and 2 male buffalos at Rs. 50= Rs. 200 : interest at 6¼ per cent ...	18	12	0
2.	There is much disease and bullocks last only 8 years : depreciation	37	8	0
3.	Feed and keep of two pairs of plough cattle for one year(2)	123	0	0
4.	Annual cost of implements (not worked out specially for this tract)	5	0	0
	Total ...	184	4	0

Crop on one plough is 11½ kilas(1) : so cost of cultivation per kila is Rs. 16.

II.—Wheat—one kila.

		Rs.	A.	P.
1.	Cost of cultivation as above	16	0	0
2.	Manure costs nothing. The carriage of the manure costs (3)	3	4	0
3.	26 topas (=1⅝ ser pakka) of seed are sown — at special price	5	0	0
4.	No weeding.			
5	Reaping (4)	3	15	0
6.	Threshing (5)	1	5	0
7.	Winnowing (6)	1	8	0
8.	Menials—Blacksmith, carpenter, potter and mochi (tanner) (7)	4	14	0
9.	Chuhra for removing dung and making munj ropes for the well gets 1 pand (¼ mání) of wheat per plough = $2\frac{3}{16}$ pakka maunds at Rs 3 = 6-12-0 which has to be divided over 3 kilas and falls per kila at	2	4	0
10.	Revenue Re. 1-12-0 and cesses 18 per cent. on the revenue	2	1	0
11.	Annual cost of well gear (8)	2	5	0
	Total ...	42	8	0

Outturn.

The wheat is wadanak (*triticum durum*) and outturn is given as 2 mánís = 17½ maunds + the bharis taken by the reapers and menials. That is—

	Rs.	A.	P.
Grain, 17½ maunds + 78 sers + 18 sers = 19 maunds 36 sers at Rs. 3 ... ... =	59	11	0
Straw (bhusa) 35 maunds + 156 sers + 36 sers = nearly 40 maunds at 2 maunds to Re 1 ... ... =	20	0	0
Total ...	79	0	0
Net profit per kila or acre ...	73	3	0

(Partly irrigated from the we

Kharif.

Chari ...
Cotton ...
Sugarcane ...
Rice ...
Turnips ...

No grain nor cake is fed.

Chari, 2 kilas—6 or 7 b
84 m
Senji, 1 kila—at Rs. 4 o
Wheat straw, on 3 kilas
Turnips, 1 kila at Rs. 5

A single plough cultivator bas

Donkey carriage is Rs. 2 for or
carry the manure for a kila in a d
=Rs. 2+2 annas +12 annas+6 annas

5 men (2 of the house and 3
topas of grain (=13 or 14 sers pakka).

The cost is then $\left\{\begin{array}{l}3\times 13\\ 3\times 26\end{array}\right.$

Two owners with one labour
one meal, *i. e.*, 6½ sers pakka of wheat

Chuhra gets 6 topas (=9¾ sers
bhusa (straw) in a stack (dhar : buharu
Re. 1-8-0.

There are 8 ploughs on one we
Lohar }
Tarkhan } each gets ½ r
Kumhar } (bundles)
The mochi gets half of this ab
Taking 15 kilas of wheat irr

$$\frac{3\frac{1}{2}\times 6\times 13}{15}\text{ se}$$
$$+\frac{3\frac{1}{2}\times 6\times 26}{15}\text{ se}$$
$$+\frac{3\frac{1}{2}\times 4\frac{3}{8}}{15}\text{ maun}$$

(1) The mahl has to be re
time costing Rs. 3
(2) The dhol and chakli (
ter who receives 1
(3) The *bair* (wheel on w
mání ...
The tinds are supplie

Taking the area of well crops

vell in the Sharakpur Tahsil.

1 kila = 8 kanals = 1 acre.

(¹) Cropping.

(Partly irrigated from the well and partly unirrigated.)

Kharif.		*Rabi.*	
Chari ...	2 kilas.	Wheat ...	3 kilas
Cotton ...	1 kila	Senji ...	1 kila
Sugarcane ...	4 kanals	Gram ...	2 kilas
Rice ...	1 kila	(Sarson is sown in wheat)	
Turnips ...	1 „		
	5½ kilas		6 kilas

Total 11½ kilas.

(²) Feed of bullocks

No grain nor cake is fed.

	Rs.	A.	P.
Chari, 2 kilas—6 or 7 bharis (each of 1½ maund pakka) to the kanal which comes to 84 maunds worth about Rs. 28 per kila or — for 2 kilas ...	56	0	0
Senji, 1 kila—at Rs. 4 or Rs. 5 the kanal	40	0	0
Wheat straw, on 3 kilas at 32 maunds the kila at 2 maunds to Re. 1 ...	48	0	0
Turnips, 1 kila at Rs. 5 the kanal	40	0	0
Total ...	184	0	0

A single plough cultivator has {2 bullocks, 2 male buffalos, 1 cow or she-buffalo, 2 young stock} ∴ the cost of feeding his plough cattle is ⅔ of Rs. 184 = Rs. 123.

(³) Manure.

Donkey carriage is Rs. 2 for one kila. The donkey owner gets his food and the animals get a feed. Twenty donkeys would the manure for a kila in a day and would get 1 pand (=1½ maund pakka) of green fodder and the same of straw . 2+2 annas +12 annas+6 annas = Rs. 3-4-0.

(⁴) Reaping.

5 men (2 of the house and 3 labourers) can cut one kila in a day. Each labourer gets one bhari which contains 8 or 9 of grain (=13 or 14 sers pakka).

	Rs.	A.	P.
The cost is then { 3 × 13 sers grain at Rs. 3 the maund = ...	2	15	0
3 × 26 sers straw at = 2 maunds for Re. 1 = ...	1	0	0
Total ...	3	15	0

(⁵) Threshing.

Two owners with one labourer can thresh 1 kila in 1½ day. The labourer gets 1 pai (=4 topas) of wheat a day and eal, *i. e.,* 6½ sers pakka of wheat worth 10 annas and 4 annas of food. For 1½ day's cost is Re. 1-5-0.

(⁶) Winnowing.

Chuhra gets 6 topas (=9¾ sers) per máni (here = 8¾ maunds pakka) for winnowing alone and 8 topas if he stacks the (straw) in a stack (dhar : buharu (=musal) ; limbdi). For a crop of 17½ maunds he would get 2 × 9¾ sers worth at Rs. 3= -8-0.

(⁷) Menials.

There are 8 ploughs on one well.

Lohar, Tarkhan, Kumhar } each gets ½ máni of grain per well each harvest = 1½ máni of wheat in all. Each also gets 6 bharis (bundles) of wheat in straw.

The mochi gets half of this above (*i. e.* 1 pand = ¼ máni).

Taking 15 kilas of wheat irrigated by one well the payments per kila come to—

$$\left.\begin{array}{l} \dfrac{3\frac{1}{2}\times 6\times 13}{15} \text{ sers of grain} = 18 \text{ sers at Rs. 3 the maund} \\ +\dfrac{3\frac{1}{2}\times 6\times 26}{15} \text{ sers of straw} = 36 \text{ sers at 2 maunds} = \text{Re. 1} \\ +\dfrac{3\frac{1}{2}\times 4\frac{3}{8}}{15} \text{ maunds of grain} = 41 \text{ sers at Rs. 3 the maund} \end{array}\right\} = \text{Rs. 4-14-0.}$$

(⁸) Cost of well gear.

	Rs.	A.	P.
(1) The mahl has to be replaced 10 times in the year and requires 26 seers of munj each time costing Rs. 3	=30	0	0
(2) The dhol and chakli (horizontal and vertical cogwheels) are obtained from the carpenter who receives 1 máni a year = 8¾ maunds at Rs. 3	=26	4	0
(3) The *bair* (wheel on which the mahl works) is also supplied by the carpenter for half a máni	=13	2	0
The tinds are supplied by the potter.			
Total ...	69	6	0

Taking the area of well crops as 30 kilas the cost per kila is Rs. 2-5-0.

IV.—Expenses of wheat cultivation on a well in the Gujranv

II.—*General cultivation expenses.*

		Rs.	A.	P.
1.	Price of 4 bullocks is Rs. 400: interest at Rs. 6¼ per cent.	25	0	0
2.	Bullocks work 10 years: depreciation	40	0	0
3.	Feed and keep of two pairs of bullocks for one year (²) ...	163	0	0
4.	Annual cost of implements (not worked out separately for this tract) say	5	0	0
	Total ...	233	0	0

Cropped area under one plough is 10½ kilas ∴ cost per kila is Rs. 22-3-0.

II.—*Cost of wheat cultivation—one kila.*

		Rs.	A.	P.
1.	Cost of cultivation as above	22	3	0
2	Manure costs nothing. Payment for donkey carriage of manure to the field is	2	0	0
3.	36 sers of seed	2	12	0
4.	Weeding costs nothing: it is done by the cultivator when he gathers the rape sown with the wheat.			
5.	Reaping (³)	4	8	0
6.	Threshing (⁴)	1	8	0
7.	Winnowing (⁵)	1	12	0
8.	Payment to menials — blacksmith, carpenter, potter and tanner (⁶)	5	13	0
9.	Sepi of a cultivator with one plough gets (⁷)... ...	1	11	0
10.	Revenue and cesses	1	4	0
11.	Annual cost of well gear (⁸)	1	0	0
	Total ...	44	7	0

Outturn.

The outturn of well wheat (wadanak, *triticum durum*) with which a cultivator is satisfied is given as 2 mánís (= 16½ maunds): a really good crop is 3 mánís (25½ maunds).

	Rs.	A.	P.
To 16½ maunds we have to add the bharis taken by the reapers and menials = *grain* 16½ maunds + 45 sers + $\frac{31\cdot5}{8}$ sers = 18 maunds 24 sers which at Rs. 3 is valued ...	55	9	0
Straw 32 maunds + 90 sers + $\frac{31\cdot5}{4}$ sers = 36 maunds 9 sers which at 2 maunds to rupee is valued	18	2	0
Total ...	73	11	0
Balance profit per kila or acre ...	29	4	0

One plough with two pairs of

Kh

Chari ... ...

Turnips ... ...

Sugarcane .. ...

Cotton ... ...

Maize ... ...

Toria ...

There are hardly any home bre
the well two pairs are needed. Bullocks

Chari—2½ kilas

Turnips 4 kanals at Rs
Wheat straw on 4 kilas
Senji 6 kanals at Rs. 10

The ordinary cultivator on one
cost ⅔rds of the whole or Rs. 163. This
The ration will be increased wit

The cultivator with one other o
containing 15 sers of grain. The cost is

3 × 15 sers c
3 × 30 „ ,

Owner with one other of h
The labourer gets 6 topa

The chuhra gets 8 topas (
winnowing ∴ for a cro

There are 8 pairs of plough
sers of grain to the bha
40 topas (= 1½ pakka m
There will be 4 × 4 = 16 kilas

$\frac{3\frac{1}{2} \times 12 \times 15}{16}$ sers

$+ \frac{3 \times 1\frac{1}{2} \times 40}{16}$ „

$\frac{3\frac{1}{2} \times 12 \times 30}{16}$ ser

Every cultivator on a well pays
3 manis (8¼ maunds to a mani) of grain
is one maund pakka of wheat a month.
then get—

1½ × 8¼ maunds of w

1½ × 8¼ maunds of b

12 maunds of wheat

The man with one plough
sepi and the sepi also ma
the mání of all grains, i
on 16½ maunds worth at

(1) If a well is worked co
Each mahl costs Rs
(2) The potter supplies th
(3) The horizontal and ve
ter who gets 6 ma
(4) The wheel on which t
cost is ..

The area of crop on a wel

of wheat cultivation on a well in the Gujranwala Tahsil.

1 kila = 8 kanals = 1 acre.

Rs.	A.	P.
25	0	0
40	0	0
163	0	0
5	0	0
233	0	0

Rs.	A.	P.
22	3	0
2	0	0
2	12	0
4	8	0
1	8	0
1	12	0
5	13	0
1	11	0
1	4	0
1	0	0
44	7	0

which a cultivator is
ánís (25½ maunds).

Rs.	A.	P.
55	9	0
18	2	0
73	11	0
29	4	0

(¹) Cropping.

One plough with two pairs of cattle can manage 10 kilas of crop —

Kharif.		*Rabi.*	
Chari	2½ kilas	Wheat	4 kilas.
Turnips	4 kanals	Gram	1 kila.
Sugarcane	4 ,,	Senji (after cotton and maize) ...	6 kanals.
Cotton	4 ,,		5 kilas—6 kanals.
Maize	4 ,,		
Toria	4 ,,		
	5 kilas.		

Total 10 kilas 6 kanals, partly irrigated, partly barani.

(²) Cost of bullocks and feeding.

There are hardly any home bred bullocks. Bullocks and male buffalos are yoked together. For working one plough and the well two pairs are needed. Bullocks cost Rs. 100 each: buffalos cost less. Bullocks are given hardly any gram or cake.

	Rs.
Chari—2½ kilas ... at Rs. 4 or Rs. 5 the kanal *or* 10 bharis (of 1½ maunds pakka) = 15 maunds pakka per kanal at 3 maunds to Re. 1.	100
Turnips 4 kanals at Rs. 5 the kanal	20
Wheat straw on 4 kilas—128 maunds at 2 maunds to Re. 1	64
Senji 6 kanals at Rs. 10 a kanal (a rate which zemindars here say can always be got) ...	60
Total ...	244

The ordinary cultivator on one plough will have 4 bullocks, 1 she-buffalo, 1 cow and 2 young stock. The bullocks will cost ⅔rds of the whole or Rs. 163. This is a low estimate.

The ration will be increased with maize stalks and gram bhusa.

(³) Reaping.

The cultivator with one other of his family and 3 labourers can cut a kila in one day. Each labourer gets one load (bhari) containing 15 sers of grain. The cost is therefore—

	Rs.	A.	P.
3 × 15 sers of grain at Rs. 3 the maund	3	6	0
3 × 30 ,, ,, straw at 2 maunds to Re. 1	1	2	0
Total ...	4	8	0

(⁴) Threshing.

	Rs.	A.	P.
Owner with one other of his family and one labourer can thresh one kila in 2 days. The labourer gets 6 topas of grain a day (6 topas = 10 sers), 20 sers at Rs. 3 =	1	8	0

(⁵) Winnowing.

	Rs.	A.	P.
The chuhra gets 8 topas (= 13 sers pakka) per mani (8¼ maunds pakka) of wheat for winnowing ∴ for a crop of 16 maunds he gets 26 sers worth ...	1	12	0

(⁶) Menials.

There are 8 pairs of plough cattle on one well. The *lohar, tarkhan* and *kumhar* each gets 12 bharis of wheat (15 sers of grain to the bhari) and the *mochi* gets 6 bharis per well. The *lohar, tarkhan* and *kumhar* also each gets 40 topas (= 1⅓ pakka maunds) of grain per well.

There will be 4 × 4 = 16 kilas of wheat on a well. Therefore the cost of menials falling on one kila of wheat will be—

Rs. A. P.

$$\left.\begin{array}{l} \dfrac{3\frac{1}{2} \times 12 \times 15}{16} \text{ sers of grain} = \dfrac{315}{8} \\ + \dfrac{3 \times 1\frac{1}{3} \times 40}{16} \text{ ,, ,, ,,} = \dfrac{45}{4} \end{array}\right\} = \dfrac{405}{8} \text{ sers at Rs. 3 the maund} = 3\ \ 13\ \ 0$$

$$\frac{3\frac{1}{2} \times 12 \times 30}{16} \text{ sers of straw} = \frac{315}{4} \text{ sers at 2 maunds to the rupee} = 2\ \ 0\ \ 0$$

Total ... 5 13 0

(⁷) Sepi.

Every cultivator on a well pays a sepi. A man who cultivates several ploughs of land has a whole-time sepi. He gets 3 manis (8¼ maunds to a mani) of grain, half wheat and half barley and two meals a day. If meals are not given the equivalent is one maund pakka of wheat a month. If he works on alternate days he gets half this amount. A whole-time sepi would then get—

	Rs.	A.	P.
1½ × 8¼ maunds of wheat = $\frac{99}{8}$ maunds at Rs. 3	37	2	0
1½ × 8¼ maunds of barley = $\frac{99}{8}$ maunds at Rs. 2	24	12	0
12 maunds of wheat (in lieu of food) at Rs. 3	36	0	0
Total ...	97	14	0
The man with one plough has his dung and his house sweepings removed by his sepi and the sepi also makes the munj rope for the well mahl. He gets 8 topas to the máni of all grains, *i.e.*, 13 sers out of each 8¼ maunds of wheat = 26 sers on 16½ maunds worth at Rs. 3 the maund	1	11	0

(⁸) Cost of well gear.

	Rs.	A.	P.
(1) If a well is worked constantly the mahl has to be replaced 8 times in the year. Each mahl costs Rs. 2	16	0	0
(2) The potter supplies the *tinds* (buckets) and there is no cost.			
(3) The horizontal and vertical cogwheels (*dhol, chakli*) are supplied by the carpenter who gets 6 maunds pakka of wheat a year = at Rs. 3	18	0	0
(4) The wheel on which the mahl works costs Rs. 25 and lasts 4 years ∴ annual cost is	6	4	0
Total ...	40	4	0

The area of crop on a well is 40 kilas; so the share of one kila is Re. 1.

V.—Expenses of sugarcane cultivation in a canal-irrigated village of the G

I.—*General cultivation expenses*

		Rs.	A.	P.
1.	Price of a pair of bullocks at Rs. 200 : interest at 6¼ per cent. =	12	8	0
2.	Bullocks will work 8 years ∴ depreciation is	25	0	0
3.	Feed and keep of a pair of bullocks for one year (²)	89	0	0
4.	Annual cost of farm implements	4	3	0
	Total	130	11	0

Cropped area under one plough is 9½ ghumaos ∴ cost of cultivation of a ghumao is Rs. 13-12-0.

II.—*Sugarcane*, var, *dhaulu or katha.*

		Rs.	A.	P.
1.	Cost of cultivation as above	13	12	0
2.	Manure—2 cart-loads per kanal. Manure costs nothing, but carting costs Rs. 2 the ghumao	2	0	0
3.	Seed canes – 8 rasse (ropes)—one rassa = 3½ cubits and costs Re. 1	8	0	0
4.	Weeding (³)	14	4	0
5.	Harvesting—*i e.,* cutting, carrying the cane to the mill and stripping. Eight men can manage one kanal in half a day. They get the tops : there is no cash payment.			
6.	Crushing with bullock mill (⁴)	3	0	0
7.	Boiling and making gur (⁴)	1	8	0
8.	Sugar-crushing and boiling apparatus—annual share of one ghumao (⁵)	2	1	0
9.	Tarkhan and Lohar each gets 5 kacha sers of gur per plough = 4 sers pakka in all, worth	0	6	0
10.	Land revenue Rs. 3-2-0, water rates Rs. 6	9	2	0
	Total	54	1	0

Outturn is 8 kacha maunds of gur to the kanal including all payments = 25⅝ pakka maunds per ghumao at Rs. 3-12-0 = Rs. 96.

This gives a profit of Rs. 41-15-0 per ghumao, equivalent to Rs. 50 an acre.

Under one plough there are usua
Kha

Cane ...
Maize ...
Chari and moth
Rice ...
Cotton (with
moth) ...

Bhadon ... }
Assuh ... } August to
Katik ... } vember.

Maghar .. } November to
Poh ... } nuary.

Magh .. }
Phagan ... } January to M
Chet ... }

In one house there are usually two

Food grown.

4 kanals of chari worth ...
10 kanals of senji worth ...
Straw from 4 ghumaos = 96
maunds at 3¾ maunds to
Re. 1 ... ...

Total ...

(Price of turi in an ordinary year is given as 3 pands to the rupee, 1 pand = the weight which two men can lift up aud one man can carry = 1¼ maund pakka)

Taking ⅔rd of the food gr
consumed by the plough ca
total cost of feeding a pai
lock is Rs. 89.

One weeding (anhi—blind) is done
weedings are done with the baguri (hoe) : th
gets 6 annas if no food is given. With the
cultivator's house the hired labour will cost—

8 men at 6 annas for 4 baguri
6 mon for kahi weeding

For crushing one kanal of cane 24
Feeders of mill ([illegible]) —2 by
They get 2½ kacha sers of
hours ∴ cost of crushing ca
Furnace feeders ([illegible]) ge
ghumao of cane 40 kacha ser

The owner does the boiling an
*This is a low estimate. In the Sia
Mill feeder.—One man gets 3
ghumao = 48 sers worth
Furnace feeder (Jhoka) gets 1
every day = 16 sers gur w
He also gets 1 *mat* (7 to 12 wel
sers of juice which would yiel

(⁵) S

(1) 3 roller mill costs R
(2) Boiling pan (karah)
(3) Wooden gur pan (g

But several owners will be joint in thi

in a canal-irrigated village of the Gurdaspur Tahsil.

1 ghumao = ·826 acre.

(1) Cropping.

Under one plough there are usually 7 ghumaos which are cropped thus :—

Kharif.		*Rabi.*	
Cane ...	1 ghumao	Wheat ...	4 ghumaos
Maize ...	1 ,,	Senji (after maize and cotton) ...	1¼ ghumao
Chari and moth	½ ,,	Masar (after rice)	½ ,,
Rice ...	½ ,,	Gram (after chari)	½ ,,
Cotton (with moth) ...	¼ ,,		
	3¼ ghumaos		6¼ ghumaos

Total 9½ ghumaos.

(2) Feeding of cattle.

Bhadon ... Assuh ... Katik ...	August to November.	Chari and moth. Also in Bhadon and Assuh for the bullocks *either* one pakka ser of gram a day *or* gur and ata to the same amount in the proportion of 2 to 3.
Maghar .. Poh ...	November to January.	Mash or Senji and wheat straw and cane-tops (ág).
Magh .. Phagan ... Chet ...	January to March	Senji and wheat straw or cane-tops. Also in Poh and Magh one kacha ser of gur to each bullock daily and 5 kacha sers (one watti) of moth grain.

Bysakh ...	April and May ...	Grazing only.
Jeth ... Har ...	May to July.	Gutawa = bhusa wet with water and wheat meal (ata) and sometimes rape cake added.
Sawan	...	Moth and grazing.

In one house there are usually two bullocks, one cow or buffalo, one young animal—4.

Food grown.

	Rs.	A.	P.
4 kanals of chari worth ...	12	0	0
10 kanals of senji worth ...	40	0	0
Straw from 4 ghumaos = 96 maunds at 3¾ maunds to Re. 1	25	8	0
Total ...	77	8	0

(Price of turi in an ordinary year is given as 3 pands to the rupee, 1 pand = the weight which two men can lift up and one man can carry = 1¼ maund pakka.)

Taking ⅔rd of the food grown as consumed by the plough cattle the total cost of feeding a pair of bullock is Rs. 89.

Food bought.

		Rs. A. P.	Rs. A. P.
Bhadon ... Assuh ...	*either* 1 pakka ser of gram a head daily = 3 maunds at 16 sers to Re. 1 =	...	7 8 0
	or 3 maunds of gur and ata—*i. e.*, 48 sers gur at Rs. 3-12-0 a maund =	4 8 0	*or*
	plus 72 sers ata at 11 sers to Re. 1 =	6 8 0	
		11 0 0	11 0 0
Jeth ... Har ...	For gutawa — one ser of ata a day = 60 sers at 11 sers per Re. 1 =	...	5 8 0
Poh ... Magh ...	120 kacha sers = 48 pakka sers of gur =	4 8 0	
	600 kacha sers = 6 pakka maunds of moth at 15 sers to Re. 1 =	16 0 0	
		20 8 0	20 8 0
			37 0 0

(3) Weeding.

One weeding (anhi—blind) is done before the cane has sprouted. Four weedings are done after waterings. The first 4 weedings are done with the baguri (hoe): the last with the kahi (spade). With the baguri one man can do 16 marlas a day and gets 6 annas if no food is given. With the kahi one man can do 1 kanal a day and gets 6 annas. Allowing for 2 men in the cultivator's house the hired labour will cost—

		Rs.	A.	P.
8 men at 6 annas for 4 baguri weedings	=	12	0	0
6 men for kahi weeding	=	2	4	0
Total ...		14	4	0

(4) Crushing and boiling.

For crushing one kanal of cane 24 hours are required.

Feeders of mill ([illegible]) —2 by night and 2 by day.

		Rs. A. P.
They get 2½ kacha sers of gur each, *i. e.*, total payment is 4 pakka seers in 24 hours ∴ cost of crushing cane from one ghumao is 32 sers at Rs. 3-12-0 ...	=	3 0 0
Furnace feeders ([illegible]) get 5 kacha sers of gur for day and night = for a ghumao of cane 40 kacha sers or 16 pakka sers, worth ...		1 8 0
Total ...		*4 8 0

The owner does the boiling and skimming himself.

*This is a low estimate. In the Sialkot district I got the following much higher payments—

		Rs. A. P.
Mill feeder.—One man gets 3 sers pakka of gur a day and takes 16 days over one ghumao = 48 sers worth		4 8 0
Furnace feeder (Jhoka) gets 1 ser pakka (chak or tasting) and an evening meal every day = 16 sers gur worth Re. 1-8-0 and 16 days' meals worth Rs. 2 ...	=	3 8 0
He also gots 1 *mat* (7 to 12 well tinds, 2 sers each) of juice each 24 hours = 256 sers of juice which would yield 42½ sers gur worth	=	3 15 0
Total ...	=	11 15 0

(5) Sugar-crushing and boiling apparatus.

			Annual cost. Rs. A. P.
(1) 3 roller mill costs Rs. 40	and lasts 10 years...	...	4 0 0
(2) Boiling pan (karah) costs Rs. 15	,, 4 years...	...	3 12 0
(3) Wooden gur pan (gand) costs Rs. 8	,, 1 year ...	...	0 8 0
	Total	...	8 4 0

But several owners will be joint in this and the cost may be spread over about 4 ghumaos ∴ cost per ghumao Rs. 2.

VI.—Expenses of sugarcane cultivation in a canal-irrigated village o

I.—General cultivation expenses.

		Rs.	A.	P.
1.	Price of a pair of bullocks at Rs. 200 : interest at 6¼ per cent.	12	8	0
2.	Bullocks will work 8 years ∴ depreciation is ...	25	0	0
3.	Feed and keep of a pair of bullocks for one year ...	161	14	0
4.	Annual cost of farm implements	4	3	0
	Total ...	203	9	0

Cropped area under one plough is 14¾ ghumaos ∴ cost of cultivation of a ghumao is Rs. 13-13-0.

II.—Sugarcane, var, *dhaulu or katha.*

		Rs.	A.	P.
1.	Cost of cultivation as above	13	13	0
2.	Manure costs nothing	2	0	0
3.	Eight rasse (bundles tied with ropes of 3½ cubits) at Re. 1 the rassa	8	0	0
4.	For sowing 3 men and a ploughman are needed, two of whom will be hired at Re. 0-6-0	0	12	0
5.	Weeding (³)	12	4	0
6.	Harvesting—(*i.e.*, cutting, carrying cane to mill and stripping) costs nothing. Eight men can manage one kanal a day and get the tops. Each man chews about 10 canes ∴ 10×8×8 canes=640 canes weighing about 4 maunds and yielding 14 sers of gur worth (at Rs. 4 the maund) Re. 1-6-0	1	6	0
7.	Crushing with bullock mill (⁴)	5	9	0
8.	Boiling and gur-making (⁴)	4	13	0
9.	Annual charges for crushing and boiling plant (⁵) ...	2	5	0
10.	Payment to lohar and tarkhan (⁶)	1	8	0
11.	Oil for burning and lubrication	2	0	0
12.	Land revenue Rs. 3-2-0 and water rate Rs. 6... ...	9	2	0
	Total ...	63	8	0

Outturn is 3 pakka maunds (half gur and half shakkar) to the kanal including all payments. That is, 24 maunds worth at Rs. 4 the maund=Rs. 96.

Therefore profit from 1 ghumao of cane is Rs. 32-8-0, equivalent to Rs. 39-4-0 the acre.

Under one plough there are ge

Kharif.

Cane ...
Cotton with moth ...
Rice ...
Maize and mash
Chari and moth
Mash ...

Bhadon Assuh Katik	... ...	August to Noven ber.
Maghar	...	November- Decem ber.
Poh	...	December-Januar
Magh Phagan Chet	... ...	January to April

In each house there are usually t

Food grown.

1. 4 kanals of moth in cotton at Rs.
2. Gram bhusa from 1 ghumao at 20 1½ maunds per Re. 1 ..
3. Green masar, 2 kanals, at Rs. 4 ..
4. Bhusa of masar, 6 kanals, 15 m maunds per Re. 1 ...
5. Wheat straw from 4 ghumaos, 100 3 maunds to Re. 1 ... ..
6. Chari and moth, 1 ghumao, at Rs.
7. Mash, bhusa from 2 ghumaos 22 1¼ maund per Re. 1 ..
8. Maize stalks from one ghumao, 48 annas per cubit ..
9. 10 kanals of senji at Rs. 5 ..
10. Rice straw from 2 ghumaos 54 m maunds per Re. 1 (*i.e.*, 3 headload

*Of this Rs 122-13-0 to be debited

First weeding is done before th *hurpa* and the last with the *kahi*. O men in cultivator's house the hired labou

8 men at 6 annas each for
8 men at 8 annas each for
6 men at 6 annas for one

One kanal of cane is crushed in sers of gur and two well tinds (=2 sers yield 24 sers of gur =56 sers of gur at R *Furnace feeder* (جھوکا) gets—

(*a*) 2⅓ kacha sers of gur a
(*b*) 1½ sers of gur to each
(*c*) 2 tinds of juice to dr

Which, at Rs. 4 t
Total cost of crush

(*a*) 3 roller mill costs Rs. 4
(*b*) Boiling pan (karah) cos
(*c*) Gur pan (gand) costs

Several owners will be joint and

Fach gets—
(*a*) One *rori* of gur durin
(*b*) 5 kacha sers of gur at
(*c*) 1 waltoi of juice (= 14
(*d*) Re. 1 in cash for pettr

on in a canal-irrigated village of the Gurdaspur Tahsil.

1 ghumao = ·826 acre·

(¹) Cropping.

Under one plough there are generally 11 ghumaos which are cropped thus—

Kharif.		*Rabi.*	
Cane ...	2 ghumaos	Wheat ...	4 ghumaos
Cotton with moth ...	4 kanals	Gram (after chari)	1 ghumao
Rice ...	2 ghumaos	Masar (after rice)	1 ,,
Maize and mash	1 ghumao	Senji (after maize and cotton) ...	1¼ ,,
Chari and moth	1 ,,		7¼ ghumaos
Mash ...	1 ,,		
	7½ ghumaos		

Total in both harvests 14¾ ghumaos.

(²) Feeding of cattle.

Bhadon ... Assuh ... Katik ...	August to November.	Chari and moth. Also to the bullocks *either* 1 pakka ser of gram a day *or* gur and ata to the same amount in the proportion of 2 : 3.
Maghar ...	November-December.	Bhusa of mash or turi and sarson.
Poh ...	December-January	Rice straw and cane-tops.
Magh ... Phagan ... Chet ...	January to April	Senji or turi or sarson and cane-tops. Also in Poh and Magh ½ ser of gur and 1 ser of moth to each bullock daily.
Bysakh ...	April and May.	Grazing and wheat on threshing floor.
Jeth ... Har ...	May to July.	Gutawa of 1 ser ata daily per head mixed with wet straw: also chara (chari and moth chopped).
Sawan ...	July—August	Chara and grazing.

In each house there are usually two bullocks, one buffalo or cow and one young animal.

	Food grown.	Rs.	A.	P.
1.	4 kanals of moth in cotton at Rs. 3 ...	12	0	0
2.	Gram bhusa from 1 ghumao at 20 maunds at 1½ maunds per Re. 1	13	5	0
3.	Green masar, 2 kanals, at Rs. 4	8	0	0
4.	Bhusa of masar, 6 kanals, 15 maunds, at 1½ maunds per Re. 1	10	0	0
5.	Wheat straw from 4 ghumaos, 100 maunds, at 3 maunds to Re. 1	33	5	0
6.	Chari and moth, 1 ghumao, at Rs. 4 the kanal	32	0	0
7.	Mash, bhusa from 2 ghumaos 22 maunds, at 1¼ maund per Re. 1	17	9	0
8.	Maize stalks from one ghumao, 48 cubits, at 1½ annas per cubit	4	8	0
9.	10 kanals of senji at Rs. 5	50	0	0
10.	Rice straw from 2 ghumaos 54 maunds at 4½ maunds per Re. 1 (*i.e.*, 3 headloads) ...	12	0	0
	Rs.	192	11	0*

	Food bought.	Rs.	A.	P.	Rs.	A.	P.
1.	One ser of ata per head daily in Jeth and Har = 120 sers at 11 sers to rupee	...			10	15	0
2. In	Bhadon, Assuh and Katik one ser of gram daily = 4½ maunds at Rs. 2-8-0	11	4	0			
	Or gur 72 sers at Rs. 4 ...	7	3	0			
	and ata 108 sers at 11 sers to Re. 1...	9	13	0			
		28	4	0			
	Taking half of each ...	...			14	2	0
3.	In Poh and Magh 60 sers of gur at Rs. 4 = Rs 6; and 120 sers of moth at 15 sers = Rs. 8 ...	...			14	0	0
					39	1	0

*Of this Rs 122-13-0 to be debited to the draught bullocks.

	Rs.	A.	P.
Total cost of feeding 2 bullocks	161	14	0

(³) Weeding.

First weeding is done before the canes have sprouted and 3 are done after waterings. First 3 are done with *baguri* or *hurpa* and the last with the *kahi*. One man can do 16 marlas the day and gets 6 annas, if no food is given. Allowing for two men in cultivator's house the hired labour will cost—

	Rs.	A.	P.
8 men at 6 annas each for 2 baguri holdings	6	0	0
8 men at 8 annas each for 1 hoeing in harvesting season	4	0	0
6 men at 6 annas for one weeding with kahi	2	4	0
Total ...	12	4	0

(⁴) Crushing and boiling.

One kanal of cane is crushed in 24 hours. *Feeders of mill* (جوڑا) two by day and two by night—each gets 2⅓ kacha sers of gur and two well tinds (=2 sers each) of juice to drink daily=32 pakka sers of gur plus 128 sers of juice which would yield 24 sers of gur =56 sers of gur at Rs. 4 = Rs. 5-9-0.

Furnace feeder (جھوکا) gets—

		Sers of gur.
(*a*)	2⅓ kacha sers of gur a day = in 8 days	8
(*b*)	1½ sers of gur to each maund of produce = about	34
(*c*)	2 tinds of juice to drink every day = 32 sers of juice...	6
		48

	Rs.	A.	P.
Which, at Rs. 4 the maund, is worth	4	13	0
Total cost of crushing and boiling	10	6	0

(⁵) Cost of plant.

		Rs.	A.	P.
(*a*)	3 roller mill costs Rs. 40 and lasts 8 years ∴ annual cost is	5	0	0
(*b*)	Boiling pan (karah) costs Rs. 15 and lasts 4 years ∴ annual cost is	3	12	0
(*c*)	Gur pan (gand) costs	0	8	0
	Total ...	9	4	0

Several owners will be joint and the cost may be spread over 4 ghumaos of cane = Rs. 2-5-0 per ghumao.

(⁶) Payments to lohar and tarkhan.

Each gets—

		Ser of gur.	
(*a*)	One *rori* of gur during crushing = ...	1	5½ sers worth eight annas.
(*b*)	5 kacha sers of gur at the end = ...	2	
(*c*)	1 waltoi of juice (= 14 sers) equivalent to	2½	
(*d*)	Re. 1 in cash for petty repairs which will fall at 4 annas the ghumao.		

Total 12 annas each the ghumao.

VII.—Expenses of cultivation of thick cane (paunda) a

I.—General cultivation expenses.

		Rs.	A.	P.
1.	Price of a pair of bullocks, Rs. 250: interest at 6¼ per cent.	15	10	0
2.	Bullocks work 10 years ∴ depreciation	25	0	0
3.	Feed and keep of a pair of bullocks for one year (2) ...	104	0	0
4.	Annual cost of farm implements (3)	4	7	0
	Total ...	149	1	0

Cropped area under one plough is 24 bighas (1) ∴ cost of cultivation of one kacha bigha is Rs. 6-9-0 and of one pakka bigha Rs. 19-11-0.

II.—Paunda cane, one pakka bigha.

		Rs.	A.	P.
1.	Cost of cultivation as above	19	11	0
2.	Cost of manure (4)	68	0	0
3.	Seed canes 30 maunds in one pakka bigha at Re. 1 the maund	30	0	0
	They are planted very close—sometimes touching one another sometimes 4 inches apart.			
4.	Making ridges before sowing—4 men can make them in one pakka bigha in one day and get 5 annas each ...	1	4	0
5.	The sets (tukra) are put in by women—6 women can seed one pakka bigha in one day and get 3 annas each. The cultivator and his son cut up the canes and carry the sets to different parts of the field	1	2	0
6.	Weeding (5)	33	12	0
7.	One watchman is kept all the year for all crops. The share of his pay of Rs. 7 a month which falls on the cane is about one-half	42	0	0
8.	Rent to owner is Rs. 25 to Rs. 32 the pakka bigha ...	25	0	0
9.	Water rates (owner pays land revenue)	6	0	0
	Total expenditure ...	226	13	0

(Village menials get no share of paunda cane.)

Income.

Paunda is sold in two ways—

(1) It is sold on the field by weight at a rate which is sometimes one maund for Re. 0-14-0 and sometimes one maund for Re. 1-2-0. A pakka bigha yields from 240 to 300 maunds. Thus average income is about Rs. 270.

(2) It is sold standing at about Rs. 100 a kacha bigha, *i.e.*, Rs. 300 a pakka bigha. The cultivator takes half the cane-tops (kola).

Thus the profit is Rs. 270—Rs. 226-13-0 or Rs. 43-3-0 the pakka bigha or Rs. 69 the acre.

Thirty to 36 kacha bighas n

Paunda cane
Maize ...

Chari is not sown in these ga

The cultivators were unable t
jowar and sugarcane tops (kola). The
months. The wheat or barley straw (u
feed 2 bullocks, a cow and a calf. The
the rate of 10 sers a head a day. That
will be—

2½ bighas o

Gram 12 m

Wheat stra

Dry jowar

Implements.	Part of cost paid in cash.
	Rs. A. P.
1. Hal—plough ..	0 0 for share.
2. Sohaga—wooden clod breaker.	*Nil.*
3. Jula—panjali-yoke	*Nil.*
4. Por—bamboo-drill	0 2 0
5. Kassi - mattock ...	1 0 0
6. Khurpa - trowel	0 4 0
7. Daranti—sickle ..	0 4 0
Total ...	...

The shares of grain, etc., paid tc

Twenty cart loads (15 or 16 mau
trench sells for Rs. 16 or 17 and yields 4
bringing the manure from one trench to t
rupees or Rs. 21. A chaukidar is paid Rs
each.

Two weedings with khurpa—12
∴ Rs. 13-8-0 for a pakka bigha. One we
ridges round the canes. Eighteen wome
fore total cost of weedings is Rs. 13-8-0 +

# of thick cane (paunda) at Hansi.

1 kacha bigha = $\frac{5}{24}$ acre.
1 pakka " = $\frac{5}{8}$ "

(1) Cropping.

Thirty to 36 kacha bighas under one plough : all canal irrigated—

Kharif.		*Rabi.*		
Paunda cane ..	15 bighas.	Onions ...	... ...	2 bighas.
Maize ...	2 "	Potatoes	(in wadh of maize)	
		Cauliflowers	" "	
		Radishes and turnips	" "	
Rizka (lucerne)	2½ bighas.			Permanent.
	19½ bighas.			4½ bighas— Total 24 bighas

Chari is not sown in these garden lands.

(2) Feed of bullocks.

The cultivators were unable to give very definite information as to cost of feeding. The cattle get grass, rizka, maize jowar and sugarcane tops (kola). They are given each 2 sers of gram for two months in the year, and one ser a day in 4 other months. The wheat or barley straw (nira) has to be bought : and it is said that in a year of good rainfall about Rs. 50 worth will feed 2 bullocks, a cow and a calf. The share to be debited against two bullocks is Rs. 34. Dry jowar will be fed for one month at the rate of 10 sers a head a day. That is, 15 maunds which at 1½ maunds to Re. 1 are worth Rs. 10 will be needed. Total cost then will be—

	Rs.	A.	P
2½ bighas of rizka	30	0	0
Gram 12 maunds at Rs. 2-8-0	30	0	0
Wheat straw	34	0	0
Dry jowar	10	0	0
Total ...	104	0	0

(3) Implements.

Implements.	Part of cost paid in cash.	Implement lasts.	Annual cost.	Implement.	Part of cost paid in cash.	Implement lasts.	Annual cost.
	Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.
1. Hal—plough ..	0 0 for share.	Plough 1 year Share (chau) 3 months	2 0 0	8. Gandasi } Chopper 9. Gandasa }	0 8 0 0 8 0	5 or 6 years 2 years	0 2 0 0 4 0
2. Sohaga—wooden clod breaker.	*Nil.*	2 years	...	10 Kulhara—axe ...	1 4 0	5 or 6 years	0 4 0
3. Jula –panjali-yoke	*Nil.*	2 or 3 years	...	11. Sanga jeli—2-pronged fork	*Nil.*	One year	...
4. Por—bamboo-drill	0 2 0	6 or 7 years	0 1 0	12. Kasola - hoe ...	0 10 0	One year	0 10 0
5. Kassi - mattock ...	1 0 0	2 years	0 8 0	13. Santa ...	0 4 0	One year	0 4 0
6. Khurpa - trowel	0 4 0	1 year	0 4 0				
7. Daranti—sickle ..	0 4 0	2 years	0 2 0				
Total ...	...	...	2 15 0	Total ...	...	...	1 8 0
					Total annual cost ...		4 7 0

The shares of grain, etc., paid to the carpenter and blacksmith at harvest cover the rest of the cost.

(4) Manure.

Twenty cart loads (15 or 16 maunds each) of municipal manure (sweepings and night-soil) are put in one kacha bigha. One trench sells for Rs. 16 or 17 and yields 45 cart-loads or about enough for two bighas. The payment to the Kumhars (potters) for bringing the manure from one trench to the fields on their donkeys is Rs. 25. Therefore cost of manuring one kacha bigha is $\frac{17 + 25}{2}$ rupees or Rs. 21. A chaukidar is paid Rs. 2. Three men are required to spread the manure on one kacha bigha and get 5 annas each.

(5) Weeding.

Two weedings with khurpa—12 women can do one kacha bigha in one day and get 3 annas each. These two weedings cost ∴ Rs. 13-8-0 for a pakka bigha. One weeding is done with the *kassi* in Sawan. The fourth weeding consists also of heaping up the ridges round the canes. Eighteen women are needed for each of these weedings and the cost is Rs. 10-2-0 for a pakka bigha. Therefore total cost of weedings is Rs. 13-8-0 + 2 (Rs. 10-2-0) or Rs. 33-12-0 in all.